

-- Figure 1a, 1b, and 1c are alternate views of the structure of the cellulose wood.

Figure 2 is a view of a chemical process for altering the cellulose structure of wood showing one method of altering the structure of a single strand of cellulose.

Figure 3 shows a generic representation of the formula shown in Figure 2.

Figure 4 shows one alternative structural cellulose target.

Figure 5 shows an alternative target for the structural cellulose target.

Figure 6a shows the product generated by the process taught herein.

Figure 6b shows an alternative theoretical model for products by the process taught herein.

Figure 6c shows a chain of repeating units of cellulose.

Figure 7 (A-C) shows the most likely reaction with a silicon donor.

Figure 8 (A-D) shows an alternate embodiment of the invention. Figure (B1) and (B2) shows alternative intermediary boron molecules which may be generated in the process.

Figure 9 shows an alternative mechanism for achieving an alternative to intermediary 8(B).

Figure 10 shows the production of an intermediary (B) and a possible reaction using both boron and silicon (A) to guarantee a polymer with silicon and boron in the modified cellulose structure (C).

Figure 11 shows a genuine representation of a reagent with cellulose (A). Here the reagent is generically listed as  $R'-Si(X)_3$ ; where X is an -OR group, and R is an alkyl group, halogen, or hydroxyl group (OH).

Figure 12 shows a similar reaction to that shown in Figure 11 with a boron molecule substituted for the silicon molecule. Alternative embodiment are shown as B and C where two --

**Page 15, line 1**, rewrite lines 1-2 commencing with “hydroxyl groups” and ending with “treat wood.” as follows:

- - of the hydroxyl groups on the cellulose are replaced.

Figure 13 (A-C), shows a block diagram of a process to treat wood. - -

**Page 18**, delete the fourth full paragraph commencing at line 16, with “In order” and ending with “treatment.” and insert therein:

- - In order to allow for use of more common reactants, it is envisioned, as shown in Figures 15 and 16, that a catalyst for the reaction could be provided by acids or molecules yielding acids. In this preferred embodiment, the process includes the steps of

- 1) Preparing a solution, preferably in alcohol (methanol or ethanol work well),
- 2) Adding a silicone donor which has one to eight carbon alkyloxy group (methoxy, octyloxy, etc.)
- 3) Adding a strong acid (hydrochloric, phosphoric or sulfuric acid) directly or by way of a catalyst yielding the acid in solution with the water in the wood such as methyltrichlorosilane ( $\text{CH}_3\text{SiCl}_3$ ). In the preferred embodiment this is preferably an acid solution of 0.5%, but may range 5% to 0.1%. It may also be outside this range with less certain results since the acidity of the wood is not desirable for most uses.

4) Exposing the solution prepared in steps 1-3 to cellulose to allow binding as shown with or without time and pressure restrictions to limit the extent of treatment. - -